

Claims

- Sub A1*
1. A composition of matter comprising a solid state material formed of C₃₆ fullerene molecules.
 2. The composition of Claim 1 wherein the solid state material has a crystalline structure.
 3. The composition of Claim 2 wherein the crystalline structure is hexagonal.

Sub A2

 4. The composition of Claim 1 wherein the molecules are covalently bonded.
 5. An article of manufacture comprising a thin hard coating formed of a solid state C₃₆ material.
 6. A method of making a solid state C₃₆ fullerene material, comprising:
producing C₃₆ rich graphite arc soot;
removing higher order fullerenes from the soot, leaving a C₃₆ containing residue;
removing the C₃₆ from the residue;
producing a solid material from the C₃₆ removed from the residue.

7. The method of Claim 6 wherein the C₃₆ rich soot is produced by operating a carbon arc discharge in a helium atmosphere at about 400 torr pressure.
8. The method of Claim 6 wherein the higher order fullerenes are removed using a first solvent and the C₃₆ is removed using a second solvent.
9. The method of Claim 8 wherein the first solvent is toluene and the second solvent is pyridine.

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